

03500.016072.1

PATENT APPLICATION



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

|                             |   |                      |
|-----------------------------|---|----------------------|
| In re Application of:       | ) |                      |
|                             | : | Examiner: L. Pham    |
| MINEO SHIMOTSUSA, ET AL.    | ) |                      |
|                             | : | Group Art Unit: 2814 |
| Application No.: 10/657,269 | ) |                      |
|                             | : |                      |
| Filed: September 9, 2003    | ) |                      |
|                             | : |                      |
| For: SEMICONDUCTOR DEVICE,  | ) |                      |
| METHOD FOR                  | : |                      |
| MANUFACTURING THE           | ) |                      |
| SAME, AND LIQUID JET        | : |                      |
| APPARATUS                   | ) | December 29, 2004    |

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

LETTER

Sir:

Enclosed is a copy of an Official Action dated September 24, 2004, which issued in a Chinese application corresponding to the above-referenced application. An English-language translation of the Chinese Official Action is also enclosed.

The documents cited in the Chinese Official Action were previously cited in the September 8, 2003 Information Disclosure Statement and/or the April 13, 2004 Information Disclosure Statement.

Favorable consideration is earnestly solicited.

Applicants' undersigned attorney may be reached in our Costa Mesa,  
California office at (714) 540-8700. All correspondence should continue to be directed to  
our below-listed address.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Damond E. Vadnais", is written over a horizontal line.

Damond E. Vadnais  
Attorney for Applicants  
Registration No.: 52,310

FITZPATRICK, CELLA, HARPER & SCINTO  
30 Rockefeller Plaza  
New York, New York 10112-3800  
Facsimile: (212) 218-2200

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# THE PATENT OFFICE OF THE PEOPLE'S REPUBLIC OF CHINA

Address: 6 Xi Tu Cheng Lu, Haidian, Beijing

Post Code: 100088

|                         |  |  |
|-------------------------|--|--|
| Applicant:              | CANON KABUSHIKI KAISHA   | Date of Notification:<br>Date: 24 Month: 09 Year: 2004 |
| Attorney:               | WANG YIPING  |  |
| Application No.:        | 01145787.2   |  |
| Title of the Invention: | SEMICONDUCTOR DEVICE, METHOD FOR MANUFACTURING<br>THE SAME, AND LIQUID JET APPARATUS |  |

## Notification of the First Office Action

1. ☒ The applicant requested examination as to substance and examination has been carried out on the above-identified patent application for invention under Article 35(1) of the Patent Law of the People's Republic of China (hereinafter referred to as "the Patent Law").
- ☐ The Chinese Patent Office has decided to examine the application on its own initiative under Article 35(2) of the Patent Law.
2. ☒ The applicant claimed priority/priorities based on the application(s):  
filed in JP on Dec. 28, 2000, filed in JP on Feb. 9, 2001,  
filed in JP on Feb. 9, 2001, filed in JP on Feb. 9, 2001,  
filed in \_\_\_\_\_ on \_\_\_\_\_, filed in \_\_\_\_\_ on \_\_\_\_\_.
- ☒ The applicant has provided the priority documents certified by the Patent Office where the priority application(s) was/were filed.
- ☐ The applicant has not provided the priority documents certified by the Patent Office where the priority application(s) was/were filed and therefore the priority claim(s) is/are deemed not to have been made under Article 30 of the Patent Law.
- ☐ The application is a PCT continuation.
3. ☐ The applicant submitted amendments to the application on \_\_\_\_\_ and on \_\_\_\_\_, wherein the amended \_\_\_\_\_ submitted on \_\_\_\_\_ and the amended \_\_\_\_\_ submitted on \_\_\_\_\_ are not acceptable, because said amendments do not comply with ☐ Article 33 of the Patent Law.  
☐ Rule 51 of the Implementing Regulations of the Patent Law.
- The specific reasons why the amendments are not allowable are set forth in the text portion of this Notification.
4. ☒ Examination as to substance was directed to the initial application documents as filed.
- ☐ Examination as to substance was directed to the documents as specified below:  
pages \_\_\_\_\_ of the description, claims \_\_\_\_\_ and pages \_\_\_\_\_ of the drawings submitted on \_\_\_\_\_,  
pages \_\_\_\_\_ of the description, claims \_\_\_\_\_ and pages \_\_\_\_\_ of the drawings submitted on \_\_\_\_\_,  
pages \_\_\_\_\_ of the description, claims \_\_\_\_\_ and pages \_\_\_\_\_ of the drawings submitted on \_\_\_\_\_,  
the abstract submitted on \_\_\_\_\_, and the figure for the abstract submitted on \_\_\_\_\_.
5. ☐ This Notification is issued without search reports.
- ☒ This Notification is issued with consideration of the search results.
- ☒ Below is/are the reference document(s) cited in this Office Action (the reference number(s) will be used throughout the examination procedure):

| No. | Number(s) or Title(s) of Reference(s) | Date of Publication<br>(or the filing date of conflicting application) |
|-----|---------------------------------------|--|
| 1   | <u>JP 8-97401A</u> ~ * ①              | Date: <u>12</u> Month: <u>04</u> Year: <u>1996</u>                     |
| 2   | <u>JP 6-69497A</u> ~ * ②              | Date: <u>11</u> Month: <u>03</u> Year: <u>1994</u>                     |
| 3   |                                       | Date: ___ Month: ___ Year: ___   |

6. Conclusions of the Action:

☒ On the Specification:

- ☐ The subject matter contained in the application is not patentable under Article 5 of the Patent Law.
- ☐ The description does not comply with Article 26 paragraph 3 of the Patent Law.
- ☒ The draft of the description does not comply with Rule 18 of the Implementing Regulations.

☒ On the Claims:

- ☐ Claim(s) \_\_\_\_\_ is/are not patentable under Article 25 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ does/do not comply with the definition of inventions prescribed by Rule 2 paragraph 1 of the Implementing Regulations.
- ☐ Claim(s) \_\_\_\_\_ does/do not possess the novelty as required by Article 22 paragraph 2 of the Patent Law.
- ☒ Claim(s) 1-6, 10, 13-16 does/do not possess the inventiveness as required by Article 22 paragraph 3 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ does/do not possess the practical applicability as required by Article 22 paragraph 4 of the Patent Law.
- ☒ Claim(s) 51 does/do not comply with Article 26 paragraph 4 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ does/do not comply with Article 31 paragraph 1 of the Patent Law.
- ☒ Claim(s) 5, 10, 11, 17-20, 22-26, 31-36, 39, 40 does/do not comply with the provisions of Rule 20 of the Implementing Regulations.
- ☒ Claim(s) 27 does/do not comply with the provisions of Rule 21 of the Implementing Regulations.
- ☐ Claim(s) \_\_\_\_\_ does/do not comply with Article 9 of the Patent Law.
- ☐ Claim(s) \_\_\_\_\_ does/do not comply with the provisions of Rule 12 paragraph 1 of the Implementing Regulations.

7. In view of the conclusions set forth above, the Examiner is of the opinion that:

- ☐ The applicant should make amendments as directed in the text portion of the Notification.
- ☒ The applicant should expound in the response reasons why the application is patentable and make amendments to the application where there are deficiencies as pointed out in the text portion of the Notification, otherwise, the application will not be allowed.
- ☐ The application contains no allowable invention, and therefore, if the applicant fails to submit sufficient reasons to prove that the application does have merits, it will be rejected.

☐

8. The followings should be taken into consideration by the applicant in making the response:

- (1) Under Article 37 of the Patent Law, the applicant should respond to the office action within 4 months counting from the date of receipt of the Notification. If, without any justified reason, the time limit is not met, the application shall be deemed to have been withdrawn.
- (2) Any amendments to the application should be in conformity with the provisions of Article 33 of the Patent Law. Substitution pages should be in duplicate and the format of the substitution should be in conformity with the relevant provision contained in "The Examination Guidelines".
- (3) The response to the Notification and/or revision of the application should be mailed to or handed over to the "Reception Division" of the Patent Office, and documents not mailed or handed over to the Reception Divisions have no legal effect.
- (4) Without an appointment, the applicant and/or his agent shall not interview with the Examiner in the Patent Office.

9. This Notification contains a text portion of 4 pages and the following attachments:

- ☒ 2 cited reference(s), totaling 24 pages. ☐

Examination Dept. 3 Examiner: ZHONG Yi Seal of the Examination Department

## Text of the First Office Action

Chinese Examiner's  
Comment

As stated in the specification, the present application relates to a semiconductor device, method for manufacturing the same and liquid jet application. After examination, the Examiner's comments are as follows.

1. Claim 1 is not in conformity with Rule 20, 1 of the Implementing Regulations. Word of "the surface side" is an unclear wording, which makes the scope for protection is not clear, since it does not clearly describe its concrete position. Wording of "gate electrodes formed...with a gate insulator film put between them" does not clearly describe that the insulating film is formed between each other of plural gate electrodes, or formed between the gate electrodes and the gate insulator film, so as to make the scope for protection unclear. According to the contents of the specification, it should be changed to "a gate insulator film is arranged between these gate electrodes and the channel region". Claim 1 does not clearly describe positional relation and connection of the electro-thermal conversion elements and the switching devices so that the structure of the claimed semiconductor device is not clear.
2. Even though the present claim 1 is amended based on the above comments, it is still not in conformity with provision of Article 22, 3 of the Patent Law. Reference 1 (JPhei8-897410A, whole specification and figs. 1~8) discloses a method for manufacturing transverse DMOS, wherein the DMOS comprising a n-type semiconductor region 14 formed on a p-type substrate 12; insulating film 28; gate electrode 26; p-type semiconductor region 20; source 16 formed on said p-type semiconductor region, drain 18 formed on said n-type semiconductor region, and said p-type semiconductor region is formed between plural drains. The present claim 1 is different of from Reference 1 in that: the plurality of electro-thermal conversion elements and the plurality of switching devices are integrated on the p-type substrate; the p-type semiconductor region has an impurity concentration higher than that of the n-type semiconductor region. Reference 2 (JPhei6-69497A, whole specification and figs. 1~22) discloses a structure where an electro-thermal conversion device drives semiconductor device, wherein a plurality electro-thermal conversion devices and a plurality of switching devices are integrated on a p-type substrate. And it is a conditional measure and belongs to well-known knowledge for persons in the art, to arrange impurity concentration of the drain lower than that of channel region, and/or to make the drain more deep so as to improve breakdown voltage to become higher. Further, references 1 and 2 are in the same technical field, It needs no inventive work for a person skilled in the art to apply the structure of the transistor of reference 1 to the semiconductor device of reference 2 in connection with the well-known knowledge to obtain the technical solution of the present. Therefore, claim 1 does not

possess inventiveness.

3. Claim 2 is not in conformity with provision of Article 22, 3 of the Patent Law. Reference 1 has disclosed the additional technical feature of the present claim 2(see figs.). Therefore, claim 2 does not possess inventiveness.
4. Claims 3-6, 10, 13-16 are not in conformity with provision of Article 22, 3 of the Patent Law. References 1 and 2 have disclosed all additional technical features of claims 3, 5, 6, 10 and 13-16(see figs.), therefore, claims 3, 5, 6, 10, 13-16 do not possess inventiveness. And it is a general connection in the art that electro-thermal conversion elements are connected to a drain. Therefore, claim 4 does not possess inventiveness.
5. Claim 5 is not in conformity with Rule 20, 1 of the Implementing Regulations.(This part relates to literal defect, which we shall remove without your instructions.)
6. Claims 10, 11 are not in conformity with Rule 20, 1 of the Implementing Regulations. Wording of "drain sides of ..." does not clearly describe the position so that the scope for protection is unclear, which should be amended as "portion near drain of ...".
7. Claim 17 is not in conformity with Rule 20, 1 of the Implementing Regulations. Wording of "said drain sides of ..." does exist in its referred claim 1 or 2. Further, the "drain sides" cannot clearly describe the concrete position so as to make the scope for protection unclear. It may be amended to "portion near said drain...". In addition, wording of "...on insulator films thicker than said gate insulator film" is not in its referred claim 1 or 2, and concrete position of the thicker films is not described, so the scope for protection is not clear.
8. Claims 18-20 are not in conformity with Rule 20, 1 of the Implementing Regulations. "OFF substrate" is not general term in the art, and can not clearly describe the feature of the substrate. So the scope for protection becomes unclear. Wording of "liquid exhaust portions corresponding to..." does not clearly describe how they are connected, and what is their positional relation.
9. Claim 22 is not in conformity with Rule 20, 1 of the Implementing Regulations. Wording of "surface side..." is unclear, which does not describe concrete portion clearly, so as to make the scope for protection unclear. Feature "doping a first ...by utilizing said gate electrode as a mask" does not clearly describe which position of which layer the impurity is doped, so that the scope for protection is not clear. And feature "forming a semiconductor region by diffusing ..." does not clearly describe the concrete position for forming the semiconductor region, so that the scope for protection is not clear.
10. Claim 23 is not in conformity with Rule 20, 1 of the Implementing Regulations. Wording of "surface side..." is unclear, which does not describe concrete portion clearly, so as to make the scope for protection unclear. Feature "doping a first ...by

utilizing said gate electrode as a mask" does not clearly describe which position of which layer the impurity is doped, so that the scope for protection is not clear. And feature "forming a semiconductor region by diffusing ..." does not clearly describe the concrete position for forming the semiconductor region, so that the scope for protection is not clear.

11. Claims 24 and 25 are not in conformity with Rule 20, 1 of the Implementing Regulations. Wording of "surface side..." is unclear, which does not describe concrete position clearly, so as to make the scope for protection unclear. "100KeV or more" is unclear wording so that the scope for protection is unclear, because range of the energy is not clearly defined. Feature of "performing a heat treatment for activating the implanted impurity electrically" does not clearly describe relation between the "impurity" and the "first conductive type ion..." so as to make the scope for protection unclear. The "performing a first conductive type ion implantation into..." should be changed into "performing ion implantation of a first conductive type impurity ...".
12. Claim 26 is not in conformity with Rule 20, 1 of the Implementing Regulations. (This part relates to a typing error, which we can correct without your instruction.)
13. Claim 27 is not in conformity with Rule 20, 1 of the Implementing Regulations. Claim 27 is further definition of claim 22, so it should be amended as dependent claim of claim 22.
14. Claims 31-34 are not in conformity with Rule 20, 1 of the Implementing Regulations. "OFF substrate" is not general term in the art, and can not clearly describe the feature of the substrate. So the scope for protection becomes unclear. "100KeV or more" is unclear wording so that the scope for protection is unclear, because range of the energy is not clearly defined.
15. Claim 35 is not in conformity with Rule 20, 1 of the Implementing Regulations. (The first two points relate to literal defects which we can remove without your instruction.) In addition, the scope for protection is not clear since it is not clearly defined at which position, which region and which layer the second semiconductor region is formed in the whole structure.
16. Claim 36 is not in conformity with Rule 20, 1 of the Implementing Regulations. (The comments for claim 36 is exactly the same as that for claim 35, we do not repeat it.)
17. Claim 39 is not in conformity with Rule 20, 1 of the Implementing Regulations. (The first point relates to literal defects which we can remove without your instruction.) In addition, the scope for protection is not clear since it is not clearly defined at which position, which region and which layer the second semiconductor region is formed in the whole structure.
18. Claim 40 is not in conformity with Rule 20, 1 of the Implementing Regulations. (The

comments for claim 40 is exactly the same as that for claim 39, we do not repeat it.)

19. Claim 51 is not in conformity with Article 26, 4 of the Patent Law. As described on page 17, par. 3 (corresponding to paragraph bridging over page 52 and page 53 of the Japanese specification) of the specification, and each of embodiments, in order to ensure each of drains can be isolated electrically and respectively, bottom of the second semiconductor region should have sufficiently deep to be connected to the semiconductor substrate which is grounded, so that the second semiconductor region reached to the substrate. If not, the structure is not adapted to an array of transistors of a liquid jet apparatus. However, in the structure of claims 1 and 2 which are referred by claim 51, there is no such a structure arranged. Thus, claim 51 is not supported by the specification.

The specification is not in conformity with Rule 18 of the Implementing Regulation. Wording "surface sides" is unclear, does not clearly define its concrete position. In addition, "n-type" on page 10, line 21 (corresponding to page 31, line 12 of the Japanese specification) of the specification should be amended to "p-type".

Based on the above reasons, a patent right cannot be granted to the present application. If the applicant cannot provide sufficient reasons to show the claims possess novelty and inventiveness within the specified time limit, and cannot amend the application documents according to the examination comments to overcome the defects, the present application shall be finally rejected.

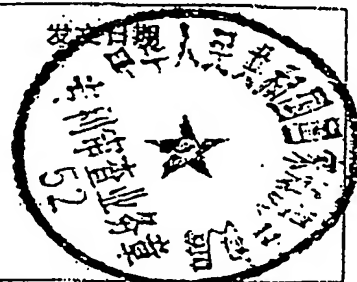


# 中华人民共和国国家知识产权局

邮政编码: 100037

北京市阜成门外大街2号万通新世界广场8层  
中国国际贸易促进委员会专利商标事务所  
王以平

申请号: 011457872



申请人: 佳能株式会社



发明创造名称: 半导体器件及其制造方法和喷液设备

## 第一次审查意见通知书

1. ☒ 应申请人提出的实审请求, 根据专利法第35条第1款的规定, 国家知识产权局对上述发明专利申请进行实质审查。

☐ 根据专利法第35条第2款的规定, 国家知识产权局决定自行对上述发明专利申请进行审查。

2. ☒ 申请人要求以其在:

JIP 专利局的申请日 2000年12月28日为优先权日,  
JIP 专利局的申请日 2001年02月09日为优先权日,  
JIP 专利局的申请日 2001年02月09日为优先权日,  
JIP 专利局的申请日 2001年02月09日为优先权日,  
专利局的申请日 年 月 日为优先权日。

☒ 申请人已经提交了经原申请国受理机关证明的第一次提出的在先申请文件的副本。

☐ 申请人尚未提交经原申请国受理机关证明的第一次提出的在先申请文件的副本, 根据专利法第30条的规定视为未提出优先权要求。

3. ☐ 经审查, 申请人于:

年 月 日提交的 不符合实施细则第51条的规定;  
年 月 日提交的 不符合专利法第33条的规定;  
年 月 日提交的

4. 审查针对的申请文件:

☒ 原始申请文件。 ☐ 审查是针对下述申请文件的

| 申请日提交的原始申请文件的权利要求第 | 项、说明书第 | 页、附图第     | 页; |
|--------------------|--------|-----------|----|
| 年 月 日提交的权利要求第      | 项、说明书第 | 页、附图第     | 页; |
| 年 月 日提交的权利要求第      | 项、说明书第 | 页、附图第     | 页; |
| 年 月 日提交的权利要求第      | 项、说明书第 | 页、附图第     | 页; |
| 年 月 日提交的说明书摘要,     | 年 月    | 日提交的摘要附图。 |    |

5. ☐ 本通知书是在未进行检索的情况下作出的。

☒ 本通知书是在进行了检索的情况下作出的。

☒ 本通知书引用下述对比文献(其编号在今后的审查过程中继续沿用):

编号 文件号或名称 公开日期(或抵触申请的申请日)

1 JIP 平 8-97410A 1996-4-12

2 JIP 平 6-69497A 1994-3-11

6. 审查的结论性意见:

☒ 关于说明书:

21301

2002.8



回函请寄: 100088 北京市海淀区蓟门桥西土城路6号 国家知识产权局专利局受理处收  
(注: 凡寄给审查员个人的信函不具有法律效力)

☐ 申请的内容属于专利法第 5 条规定的不授予专利权的范围。

☐ 说明书不符合专利法第 26 条第 3 款的规定。

☐ 说明书不符合专利法第 33 条的规定。

☒ 说明书的撰写不符合实施细则第 18 条的规定。

☐

☒ 关于权利要求书:

☐ 权利要求 不具专利法第 22 条第 2 款规定的新颖性。

☒ 权利要求 1-6, 10, 13-16 不具专利法第 22 条第 3 款规定的创造性。

☐ 权利要求 不具专利法第 22 条第 4 款规定的实用性。

☐ 权利要求 属于专利法第 25 条规定的不授予专利权的范围。

☒ 权利要求 51 不符合专利法第 26 条第 4 款的规定。

☐ 权利要求 不符合专利法第 31 条第 1 款的规定。

☐ 权利要求 不符合专利法第 33 条的规定。

☐ 权利要求 不符合专利法实施细则第 2 条第 1 款关于发明的定义。

☐ 权利要求 不符合专利法实施细则第 13 条第 1 款的规定。

☒ 权利要求 5, 10, 11, 17-20, 22-26, 31-36, 39, 40 不符合专利法实施细则第 20 条的规定。

☒ 权利要求 27 不符合专利法实施细则第 21 条的规定。

☐ 权利要求 不符合专利法实施细则第 22 条的规定。

☐ 权利要求 不符合专利法实施细则第 23 条的规定。

☐

上述结论性意见的具体分析见本通知书的正文部分。

7. 基于上述结论性意见, 审查员认为:

☐ 申请人应依照通知书正文部分提出的要求, 对申请文件进行修改。

☒ 申请人应在意见陈述书中论述其专利申请可以被授予专利权的理由, 并对通知书正文部分中指出的不符合规定之处进行修改, 否则将不能授予专利权。

☐ 专利申请中没有可以被授予专利权的实质性内容, 如果申请人没有陈述理由或者陈述理由不充分, 其中请将被驳回。

☐

8. 申请人应注意下述事项:

(1) 根据专利法第 37 条的规定, 申请人应在收到本通知书之日起的三个月内陈述意见, 如果申请人无正当理由逾期不答复, 其申请将被视为撤回。

(2) 申请人对其申请的修改应符合专利法第 33 条的规定, 修改文本应一式两份, 其格式应符合审查指南的有关规定。

(3) 申请人的意见陈述书和/或修改文本应邮寄或递交国家知识产权局专利局受理处, 凡未邮寄或递交给受理处的文件不具备法律效力。

(4) 未经预约, 申请人和/或代理人不得前来国家知识产权局专利局与审查员举行会晤。

9. 本通知书正文部分共有 4 页, 并附有下列附件:

☒ 引用的对比文件的复印件共 2 份 24 页。 ☐

审查员: 钟翊(A113)

2004 年 9 月 9 日



审查部门 电学发明审查部

21301

2002. 8



回函请寄: 100088 北京市海淀区蓟门桥西土城路 6 号 国家知识产权局专利局受理处收  
(注: 凡寄给审查员个人的信函不具有法律效力)

## 第 1 次审查意见通知书正文

如说明书所述, 本申请涉及一种半导体器件及其制造方法和喷液设备。经审查, 现提出如下审查意见。

1、权利要求 1 不符合专利法实施细则第二十条第一款的规定。“表面侧”为不清楚的措辞, 没有描述清楚该具体位置, 造成权利要求的保护范围不清楚。“这些栅极之间设置有栅绝缘膜”没有描述清楚该绝缘膜是设置于多个栅电极彼此之间, 还是设置于栅电极与沟道区之间, 造成权利要求的保护范围不清楚, 依据说明书的内容应修改为“这些栅极与沟道区之间设置有栅绝缘膜”; 权利要求 1 还没有描述清楚电热转换元件与转换器件的位置关系和连接方式, 造成其要求保护的半导体器件的结构不清楚。

2、即便按照上述意见修改了权利要求 1, 权利要求 1 仍然不符合专利法第二十二条第三款的规定。对比文件 1 (JP 平 897410A, 说明书全文, 附图 1-8) 公开了一种横向 DMOS 的制造方法, 包括: P 型基板 12 上形成 N 型半导体区 14, 绝缘膜 28, 栅电极 26, P 型半导体区 20, 形成在 P 型半导体区的源区 16, 形成在 N 型半导体区中的漏区 18, P 型半导体区位于多个漏区之间, 对比文件 1 与权利要求 1 的区别在于: 多个电热转换元件和多个转换器件集成在 P 型衬底上, P 型半导体区的杂质浓度高于 N 型半导体区的杂质浓度。对比文件 2 (JP 平 6069497A, 说明书全文, 附图 1-22) 公开了一种电热转换元件驱动半导体器件的结构, 其中多个电热转换元件和多个转换器件集成在 P 型衬底上; 而将漏区的杂质浓度设为小于沟道区中的杂质浓度及/或漏的深度加深以使得晶体管的击穿电压变高是本领域用来提高晶体管的击穿电压的常用手段, 属于公知常识, 而对比文件 1 和对比文件 2 所属技术领域相同, 将对比文件 1 中的晶体管结构结合公知常识应用于对比文件 2 的半导体装置中而得到权利要求 1 的技术方案对本领域技术人员来说是不需要创造性劳动的, 因此权利要求 1 不具有创造性。

3、权利要求 2 不符合专利法第二十二条第三款的规定。对比文件 1 公开了权利要求 2 的附加技术特征 (参见附图), 因此权利要求 2 不具有创造性。

4、权利要求 3-6、10、13-16 不符合专利法第二十二条第三款的规定。对比文件 1 和 2 公开了权利要求 3、5、6、10、13-16 的附加技术特征 (参见附图),

因此权利要求 3、5、6、10、13-16 不具有创造性；电热转化元件可以与漏区连接是本领域常用的连接方式，属于公知常识，因此权利要求 4 不具有创造性。

5、权利要求 5 不符合专利法实施细则第二十条第一款的规定。“所述的两个栅电极”在其引用的权利要求中没有出现过，造成权利要求的保护范围不清楚。

6、权利要求 10、11 不符合专利法实施细则第二十条第一款的规定。“...的漏一侧...”没有描述清楚该位置，造成权利要求的保护范围不清楚，应修改为“...的靠近漏区的部分...”。

7、权利要求 17 不符合专利法实施细则第二十条第一款的规定。“...所述漏侧...”在其所引用的权利要求中没有出现过，而且也没有描述清楚该所谓“漏侧”的具体位置，造成权利要求的保护范围不清楚，可修改为“...靠近漏区的部分...”；“比所述栅绝缘膜厚的绝缘膜”在其所引用的权利要求中没有出现过，没有描述清楚该厚绝缘膜的具体位置，造成权利要求的保护范围不清楚。

8、权利要求 18-20 不符合专利法实施细则第二十条第一款的规定。“所述结构是用...引入杂质...”为不通顺不清楚的语句，造成权利要求的保护范围不清楚；“OFF 衬底”不是本领域常用的措辞，没有描述清楚该衬底的特征，造成权利要求的保护范围不清楚；“...对应于...的排液部分”没有描述清楚该“对应于”是如何连接的，其位置关系如何。

9、权利要求 22 不符合专利法实施细则第二十条第一款的规定。“表面侧”为不清楚的措辞，没有描述清楚该具体位置，造成权利要求的保护范围不清楚；“用所述栅电极作掩模掺杂第 1...杂质”没有描述清楚向哪一层的哪个位置掺杂杂质，造成权利要求的保护范围不清楚；“通过扩散...形成...半导体区”没有描述清楚该半导体区形成的具体位置，造成权利要求的保护范围不清楚。

10、权利要求 23 不符合专利法实施细则第二十条第一款的规定。“表面侧”为不清楚的措辞，没有描述清楚该具体位置，造成权利要求的保护范围不清楚；“用所述栅电极作掩模掺杂第 1...杂质”没有描述清楚向哪一层的哪个位置掺杂杂质，造成权利要求的保护范围不清楚；“通过扩散...形成...半导体区”没有描述清楚该半导体区形成的具体位置，造成权利要求的保护范围不清楚。

11、权利要求 24 和 25 不符合专利法实施细则第二十条第一款的规定。“表

面侧”为不清楚的措辞，没有描述清楚该具体位置，造成权利要求的保护范围不清楚；“100kev 以上”为不清楚的措辞，没有限定清楚该能量的范围，造成权利要求的保护范围不清楚；“进行热处理，以电...杂质”中的该杂质与“...进行第 1 导电类型离子注入”之间的关系不清楚，造成权利要求的保护范围不清楚，应将“...进行第 1 导电类型离子注入”修改为“...进行第 1 导电类型杂质离子注入”。

12、权利要求 26 不符合专利法实施细则第二十条第四款的规定。括号中的内容是不允许的，应当删除。

13、权利要求 27 不符合专利法实施细则第二十一条第三款的规定。权利要求 27 是对权利要求 22 的进一步限定，应作为其从属权利要求。

14、权利要求 31-34 不符合专利法实施细则第二十条第一款的规定。“OFF 衬底”不是本领域常用的措辞，没有描述清楚该衬底的特征，造成权利要求的保护范围不清楚；“100kev 以上”为不清楚的措辞，没有限定清楚该能量的范围，造成权利要求的保护范围不清楚。

15、权利要求 35 不符合专利法实施细则第二十条第一款的规定。“所述两个栅电极”与“所述的两个栅电极”在前面没有出现过，因此没有描述清楚该两个栅电极为哪个位置关系的栅电极，造成权利要求的保护范围不清楚；“对两个相邻的所述栅电极之间进行离子注入，其后...第 1 导电类型杂质，形成第 1...的第 2 半导体区”没有描述清楚进行的是什么类型的离子注入，而其后扩散的第 1 导电类型的杂质在前面没有出现过，且没有描述清楚其与前面进行的离子注入是什么关系，此外，没有描述清楚第 2 半导体区形成在整个结构中的哪个位置哪一层哪一区，造成权利要求的保护范围不清楚。

16、权利要求 36 不符合专利法实施细则第二十条第一款的规定。“所述两个栅电极”与“所述的两个栅电极”在前面没有出现过，因此没有描述清楚该两个栅电极为哪个位置关系的栅电极，造成权利要求的保护范围不清楚；“在两个所述栅电极之间注入杂质，其后...第 1 导电类型杂质，形成第 1...的第 2 半导体区”没有描述清楚注入的是什么类型的杂质，而其后扩散的第 1 导电类型的杂质在前面没有出现过，且没有描述清楚其与前面进行的杂质注入是什么关系，此外，没有描述清楚第 2 半导体区形成在整个结构中的哪个位置哪一层哪一区，造成权利要求的保护范围不清楚。

17、权利要求 39 不符合专利法实施细则第二十条第一款的规定。“按垂直于所述半导体衬底...杂质离子注入后, 通过扩散第 1 导电类型杂质, 形成第 2 半导体区”没有描述清楚注入的是什么类型的杂质, 而其后扩散的第 1 导电类型的杂质在前面没有出现过, 且没有描述清楚其与前面进行的杂质注入是什么关系, 此外, 没有描述清楚第 2 半导体区形成在整个结构中的哪个位置哪一层哪一区, 造成权利要求的保护范围不清楚。

18、权利要求 40 不符合专利法实施细则第二十条第一款的规定。“按垂直方向向所述半导体衬底...杂质离子注入后, 通过扩散第 1 导电类型杂质, 形成第 2 半导体区”没有描述清楚该垂直方向是相对于哪个位置的垂直方向; 注入的是什么类型的杂质, 而其后扩散的第 1 导电类型的杂质在前面没有出现过, 且没有描述清楚其与前面进行的杂质注入是什么关系; 此外, 没有描述清楚第 2 半导体区形成在整个结构中的哪个位置哪一层哪一区, 造成权利要求的保护范围不清楚。

19、权利要求 51 不符合专利法第二十六条第四款的规定。如说明书第 17 页第 3 段的内容以及说明书各实施例中的内容可知, 必须使第 2 半导体区的底部有足够的深度与接地的半导体衬底相接, 使第 2 半导体区到达衬底, 以确保每个漏可以在电学上独立地被隔开, 不是这样的结构不适用于喷液设备用的晶体管阵列, 而权利要求 51 所引用的权利要求 1 和 2 所要求保护的结构中, 没有设置这样的一种结构, 因此没有以说明书为依据。

说明书不符合专利法实施细则第十八条的规定。“表面侧”为不清楚的措辞, 没有描述清楚该具体位置; 说明书第 10 页第 21 行“N 型”应修改为“P 型”。

基于上述理由, 本发明申请不能被授予专利权。如果申请人不能在规定的期限内陈述权利要求具有新颖性和创造性的充分理由, 并按照本通知书的意见修改申请文本, 克服所存在的缺陷, 本申请将被驳回。